**Culminating Activity: Let There Be Light**

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| **Learning Objective** | *For students to demonstrate their understanding of optics through an open-ended project for final assessment* |
| **TASK:** | In groups of two or three, create some form of visual demonstration that incorporates the ideas of waves, light, and optics learned throughout the optics unit. Each group will be responsible for a written report of the science involve, a complete demonstration piece, a science fair display, a presentation at their science fair, and a self/peer review of contributions to the final product.  (Percentage based on course outline for quizzes/tests) |

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| **GRASPS** | **Use of GRASPS in this Assignment** |
| **Goal** | The goal is to expand the student’s understanding of grade 8 optics through an open-ended project, which allows them to explore a particular topic in great detail. As a replacement to a unit test, this project should:   1. Exhibit an understanding of optics with a detailed description of what properties are being observed and why they occur 2. Cover at least 2 of the 4 PLOs described by the B.C. Grade 8 Science IRP for Optics 3. Push students to delve deeper into the topic due to an personal engagement with a particular topic 4. Experience a more professional activity through the use of a science fair in the final assessment 5. Collaborate on a final product which they will present to their peers as a means for assessment 6. Improve their abilities as a self and peer reviewer 7. Give the students more ownership of their education by allowing them to choose the method by which a final assessment of their understanding is made |
| **Role** | Students will be considered research scientists with an expertise in a particular facet of optics. They will be aware of the end product being part of a “conference” (i.e. science fair) where they will present their findings to the other professionals of the class. Each student will be responsible to:   1. Research 2. Create 3. Present   for their final product. |
| **Audience** | The target audience is a classroom of grade 8 professionals in optics that are preparing to attend a conference. Each student will be considered experts in their particular project, with the remaining students considered an active cohort of professionals with expertise in other facets of the subject. |
| **Situation** | We will set up the scenario that all the students are preparing for a conference where they must present their findings to other professionals (actively playing the roles of research scientists and masters of their topic). Below is an example of the general scenario:   * We have just ended our unit on optics and are now professionals in the subject * Three class periods from the end date, we will all be attending a conference to display our expertise topics at a conference of other professionals * Each member of the class will be responsible for presenting on their particular expertise, with others attentively listening to the findings in an attempt to formulate questions for the end of the presentation * VIP judges (including the principal of the school) will proceed to determine the best presentation at the conference, with the winner receiving the grand prize (which may vary depending on resources available) |
| **Product** | Each student will be responsible for the following:   1. A written report stating the science behind their project and how it relates to the content we covered in class 2. A demonstration or interactive piece that will be the central focus of their science fair set up 3. A science fair display that includes all of the relevant information in a concise but thorough manner 4. A presentation that will be performed in front of the class, summarizing their project and the results of it 5. A self/peer review that indicates the contributions from all members of the group, including the student themselves. The peer review will be written however the self review will be done in a meeting with the teacher |
| **Standards and Criteria** | A break down of the value of each portion of the project will be given, along with a rubric making apparent what is required for each letter grade (both from the student handout). It is made clear through both that:   1. The project should clearly demonstrate the student’s understanding of optics through the incorporation of a variety of ideas from the unit 2. All components should be done according to the standards developed in class and as stated in the student handout with penalties for any missing components. 3. A focus on collaboration will be key to a successful project, with both peer and self reviews being required. It should be made clear to the students that this component is as significant as any other component of the project, and careful attention will be paid to the effectiveness of the team, and the contributions made by all members 4. Presentation should be completed without script (i.e. no papers in hand) so that the audience can get a better understanding of their actual knowledge and not what is written down. The presentation can be in any format, however obvious preparation should be made clear |